

does not appear to have been recognized in England. It may perhaps be found in the midland and eastern counties (Trent, Ouse, Cam, &c.), where the bream-flat is known to occur.

It seems scarcely necessary to compare the hybrid bream and rudd with the well-known bream and roach hybrid (*Abramis brama* × *Leuciscus rutilus*), originally described under the name *Abramis buggenhagii*, which is at once distinguished by the more elongate body and the nearly horizontal or slightly oblique mouth. Thompson's record of *A. buggenhagii* from near Belfast (Nat. Hist. Ireland, iv. p. 137) evidently refers to one of the hybrid bream and rudd described above.

EXPLANATION OF THE PLATES.

PLATE VII.

Abramis brama × *Leuciscus erythrophthalmus*.

PLATE VIII.

Abramis blicca × *Leuciscus erythrophthalmus*.

XVII.—*The Collections of William John Burchell, D.C.L., in the Hope Department, Oxford University Museum.*

IV. *On the Lepidoptera Rhopalocera collected by W. J. Burchell in Brazil, 1825–1830.* By J. C. MOULTON, of Magdalen College, Oxford.

[Continued from ser. 8, vol. i. p. 42.]

VI. NYMPHALINÆ.

MR. J. C. MOULTON, of Magdalen College, Oxford, has at my suggestion continued Miss Cora B. Sanders's valuable account of the Brazilian Rhopalocera in the Burchell Collection. In our attempts to solve the numerous difficulties which have arisen I have had abundant evidence of the skill and untiring care which he has devoted to this most important and interesting work.

E. B. POULTON.

THE following paper forms the continuation of the valuable publications by Miss Cora B. Sanders, ending with No. V.

Brassoliniæ, in ser. 8, vol. i. (Jan. 1908) Ann. & Mag. Nat. Hist. pp. 33-42. The genera have been placed in the order of Godman and Salvin's Lepidoptera Rhopalocera in the 'Biologia Centrali-Americana.' As on previous occasions, much kind help has been afforded in the identification of several specimens by Mr. F. A. Heron, of the British Museum. The species of the genus *Anax* were kindly determined for the Hope Department by Mr. Herbert Druce, F.L.S.

The arrangement of numbers and dates is carefully explained in Ann. & Mag. Nat. Hist. ser. 7, vol. xiii. (April 1904) pp. 309, 310. The following additional statements are quoted from ser. 8, vol. i. p. 34:—"Notes, other than numbers and dates, written on labels attached to the specimens are placed between inverted commas immediately after the numbers in heavy type, and immediately before the locality." "When a specimen bears a number only, the date, recovered from Burchell's note-book, is placed between square brackets. 'a.' and 'p.' associated with the date stand for 'A.M.' and 'P.M.'"

One or more specimens of each species have been compared with the British Museum series, and in the case of any doubt with the Godman-Salvin Collection also.

Westwood's list of Burchell's Nymphalidæ, which corresponds to the subfamily Nymphalinae, contains 101 numbers. All of these do not, however, refer to Nymphalinae, as there are four numbers (N. 47, N. 47*, N. 55, and N. 56) devoted to two Danainæ (*Anosia erippus*, Cr., and *Tasitia gilippus*, Cr. (140-187)), one (N. 39) to a *Libythea*, and two (N. 18 = 446-450, N. 20* = 451) to two Brassoliniæ. On the other hand, copies of the data of the following Nymphalinae have been obtained from his list of "Burchell's Acraea, etc.":—The numbers A. 5, A. 6, A. 7 refer to three species of *Eresia*, A. 11 to *Victorina stelenes*, Linn., A. 15, A. 16 to two species of *Colenis*, A. 19 to *Metamorpha dido*, Linn., A. 20, A. 22 to two species of *Dione*. The dates of the specimens under four numbers of the list of Acraeinæ &c. are very incomplete; but two small slips of paper in Westwood's handwriting give a full list of the dates which should have appeared under two of these, namely *Dione juno*, Cram., and *Metamorpha dido*, Linn. It seems probable that there were two other lists, probably on slips of paper equally small, for the two remaining species, *Dione vanille*, Linn., and *Colenis julia*, F., and that these have since been lost. One date has been obtained from Westwood's list of Erycinidæ (E. 70, *Phyciodes dicoma*, Hew.) and one from his list of Morphinae (M. 21, *Prepona*

antimache, Hübn.). Of the 101 numbers given, all are accounted for except two, viz. N. 20 and N. 73, the former of which mentions one specimen dated 21. 2. 26, and the latter five specimens dated 12. 3. 26, 7. 11. 25, 913. 25. 10. 25 (two specimens), 11. 2. 26. This last number, N. 73, enclosed in parentheses, is placed in the middle of the genus *Catagramma*, and Westwood had written this name opposite the number, but afterwards erased it. These six specimens are unfortunately as yet untraced. Westwood's list of Nymphalinae is written in a clerk's handwriting, with notes as to names, including in a few cases a rough description, in Westwood's manuscript.

All obscure localities have been defined with reference to the map given in the Introduction to the Collections of W. J. Burchell by Professor E. B. Poulton, F.R.S., in *Ann. & Mag. Nat. Hist.* ser. 7, vol. xiii. pl. iii. J. C. MOULTON.

Oxford,
March 20th, 1908.

Protogonius drurii, Butl.

p. 2. 10. 27. = 454. Lanboso to Bréjo. Between Rio Corumbá, near Cataláo, and Bomfim.

Westwood's date agrees with the above, but he gives the name *Protogonius Hippona*.

Hypna clytemnestra, Cram.

Bz. 188. I. [8. 9. 25]. = 455. Rio de Janeiro. "Papilio. Along the Aqueduct."

30. 10. 25. = 456. Minas Geraës. "(In the forest). On the N.E. side of the arraial of São João de Nepomucéna."

7. 11. 25. = 457. Minas Geraës.

24. 12. 25. = 458. Rio de Janeiro. "Aqueduct (on the first hill on the left)."

29. 12. 25. 2 = 459, 460. Rio. "Catombí—Barra Vermelha—and Rio Comprido." Westwood's list gives another captured on this date.

14. 1. 26. = 461. Rio de Janeiro. "Brought from and collected in the Valley of Laranjeiros. *Omnia insuper plantas.*"

26. 1. 26. 5 = 462-466. Morro de Ladéira and Catombý. "In a botanical and entomological excursion to the *Barra Vermelha*, *Morro de Ladéira*, and *Catombi.*" Westwood's list gives another of this date.

27. 1. 26. 7 = 467-473. Rio de Janeiro.

31. 1. 26. = 474. Rio de Janeiro. "Valley of Catombý"

and a high Mountain on the N.W. side of the Aqueduct." "All of this date were from off plants; mostly up the Valley of Catombi."

7. 3. 26. 3 = 475, 476, 477. Rio de Janeiro. "At Catombi." Bz. + 7. 3. 26. 2 = 478, 479.

Westwood's list gives five more captured on this date.

9. 3. 26. 5 = 480-484. Rio de Janeiro.

Westwood's list gives two more captured on this date.

10. 3. 26. 5 = 485-489. Rio de Janeiro.

12. 3. 26. = 490. Rio de Janeiro. "Aqueduct."

15. 3. 26. 2 = 491, 492. Rio de Janeiro. "Catombi, in plantis."

16. 3. 26. = 493. Rio de Janeiro. "In the upper part of the valley of Catombi, and along the road thence to Rio Comprido and Matto Porcos."

19. 3. 26. 2 = 494, 495. Rio de Janeiro. "In the valley of Catombi."

20. 3. 26. = 496. Rio de Janeiro. "Along the Carioca Aqueduct."

21. 3. 26. = 497. Rio de Janeiro. "Along the Carioca Aqueduct."

1. 4. 26. = 498. Rio de Janeiro. "In the valley of Catombi."

Bz. + 1. 4. 26. = 499. Rio de Janeiro. "In the valley of Catombi."

Bz. 3. 4. 26. = 500. Rio de Janeiro. "Along the Carioca Aqueduct."

Except for the additions mentioned above, Westwood's list agrees. The name *Hypna Clytemnestra* has been added in his handwriting.

The possibilities of a mimetic association between this species and *Gynacia dirce*, L., are noted under that species (pp. 187, 188).

Anæa halice, Godt.

Bz. 27. 1. 26. ♂ = 501. "Catombi." Rio de Janeiro.

31. 1. 26. ♂ = 502. Rio de Janeiro. (As 474.)

7. 3. 26. 3 ♂ = 503, 504, 505. Rio de Janeiro. "At Catombi."

10. 3. 26. 2 ♂ = 506, 507. Rio de Janeiro.

Westwood's list gives this as *Paphia*, a synonym of *Anæa*, and his dates agree.

Anæa phidile, Hübn.

14. 2. 26. ♂ = 508. Organ Mountains.

7. 3. 26. ♀ = 509. Rio de Janeiro. "At Catombi."

Bz. 13. 3. 26. ♂ = 510. Rio de Janeiro.

Bz. 1. 4. 26. ♀ = 511. „ “In the valley of Catumbi.”

Bz. + 25. 8. 27. ♂ = 512. Ollaríá to Rio Pardo.

27. 8. 27. ♂ = 513. Retiro. Just north of Rio Pardo.

p. 24. 8. 28. ♂ = 514. At Retiro. “All caught hovering and feeding on the excrement of some carnivorous animal in the virgin forest at Retiro.” This is another Retiro between Goyaz and Jeraguá.

Westwood's list mentions one more of this date, and another individual captured 26. 1. 26, Rio de Janeiro. Opposite these numbers also he wrote *Paphia*.

Anæa amenophis, Feld.

Bz. + p. 26. 8. 27. = 515. R. Pardo to Cubatáo. “Lepidoptera caught at the passage of the several streams this day.” It should be noted that this Cubatáo is far north of the place of the same name visited by Burchell from 3. 12. 26 to 17. 1. 27.

Bz. p. 24. 8. 28. 2 = 516, 517. At Retiro. (As 514.)

p. 24. 8. 28. 2 = 518, 519. „ „

Westwood's list places this species, together with *Anæa ænomais*, Boisd., under the name *Paphia*, and mentions seven specimens captured p. 24. 8. 27; this is doubtless a copyist's error for p. 24. 8. 28, of which date there are six individuals, counting two of *Anæa ænomais*. It therefore appears that one individual has since been lost, either of *A. amenophis* or *ænomais*.

Anæa ænomais, Boisd.

p. 24. 8. 28. 2 = 520, 521. At Retiro. (As 514.)

See note on *Anæa amenophis*, Feld., above.

Anæa otrere, Hübn.

11. 2. 26. = 522. Organ Mountains—“ (in a walk to the Ipé trees).”

The date in Westwood's list agrees. This and the remaining species of *Anæa* are given the generic name *Paphia*.

Anæa arginussa, Hübn.

Bz. p. 26. 8. 27. = 523. “In sylvia in exer.” R. Pardo to Cubatáo. (As 515.)

p. 26. 8. 27. = 524. “In silva in excrem.” R. Pardo to Cubatáo. (As 515.)

p. 26. 8. 27. = 525. "In sylva insuper excremen." R.

Pardo to Cubatáo. (As 515.)

A specimen = 526, with two English labels, p. 26. 8. 27. "In silva in excremen." and a. 29. 8. 27. Cérvo, north of R. Pardo (a. 29. 8. 27) or R. Pardo to Cubatáo (p. 26. 8. 27). As below or as 515.

a. 29. 8. 27. 3 = 527, 528, 529. Cérvo. "In the forest ascending the Morro de Batataes. *Papilionides*. In this forest Butterflies literally swarmed and thousands might have been caught in one day. I never saw such abundance in my life before."

Bz. + a. 29. 8. 27. = 530. Cérvo. As above.

Westwood's list gives four individuals captured p. 26. 8. 27 and six on a. 29. 8. 27: probably the sixth individual of a. 29. 8. 27 can be accounted for by specimen 533 of the next species (*A. appias*), not otherwise referred to by Westwood, while the fourth of p. 26. 8. 27 is obviously represented by one of the labels on 526.

Anax appias, Hübn.

Bz. 22. 3. 26b. = 531. Rio de Janéiro. "Along the [Carioca] Aqueduct, to the head of the Valley of Laranjeiros." See note to *Prepona amphimachus*, no. 539.

Bz. + 25. 8. 27. = 532. Ollaría to Rio Pardo.

Bz. a. 29. 8. 27. = 533. Cérvo. (As 527.)

Westwood's list does not include this last specimen with the others. It is probably entered under the last species, and accounts for the missing specimen of this date.

Siderone ide, Hübn.

Bz. 221. I. [19. 9. 25]. = 534. Rio de Janeiro. "*Papilio* (*Colias*). Caught in vicinity of Botafogo bay. Given me by Mr. Heatherly."

Westwood's name and date agree.

Siderone (Zaretas) ellops, Linn.

p. 24. 8. 28. = 535. At Retiro. (As 514.)

Westwood's date agrees.

The specimens stand under the name *Paphia*.

The series in the British Museum is placed under the generic name *Zaretas*, but in the Godman-Salvin Collection *Siderone* is retained. In their book this genus is divided into *Siderone A* and *Siderone B*.

Cæa acheronta, F., = *cadmus*, Cram.

Bz. + 898. I. 25. 10. 25. = 536. Minas Geraës.

“*P[apilio]*. At Discoberto, near João Pedro’s house.”

Bz. + 16. 2. 26. = 537. Organ Mountains.

Westwood’s list gives three more specimens, captured 4. 11. 25, 10. 11. 25, 10. 1. 26 (Rio de Janeiro and neighbourhood).

Aganisthos orion, F.

Bz. + 31. 10. 25. = 538. Minas Geraës. “On the road between Nepomucena and Domingos Ferreira’s.”

Westwood’s list includes three more specimens captured 10. 3. 26 Rio de Janeiro, 31. 8. 27 Veravínia, between Rio Pardo and Rio Grande, 26. 1. 29 Porto Real (Porto Nazionale). In his list Westwood gives Burchell’s number 1297 under this last date, and we may therefore conclude that Burchell was speaking of *A. orion* in the following passage from his Brazilian note-book:—

“1297 *Papilio*. The nature of this seems carnivorous as it frequently returned and settled on the skin of the Porco do Matto.” Mr. Oldfield Thomas, F.R.S., kindly informs me that two forms of Peccary (*Tayassu tajacu* and *T. albirostris*) occur in the locality and that either might be called “Porco do Matto.”

Prepona amphimachus, F.

9. 3. 26. ♀ = 539. Rio de Janeiro.

Westwood’s list places this species and *Prepona pheridamas*, Cram., under one number, N. 16, and includes another individual captured 22. 3. 26 *b*. On this latter date Burchell went “along the Aqueduct to the head of the Valley of Laranjeiros,” and his Brazilian note-book on this date reads:—“Along the Carioca Aqueduct. Those marked *b* were purchased from some negro-insect-catchers, who caught them all in this spot, and almost all were alive when I bought them.”

Prepona antimache, Hübn.

1273. 4. 12. 28. = 540. Porto Real [Nacional]. “Walk to the Igarapé”; and his Brazilian note-book has the following passage in reference to this number:—“*Papilio*—In the forests by the Iguapé *, hovering low between the brushwood.”

* The spelling differs in Burchell’s two note-books.

Burchell gives a similar note on a specimen (406) of *Morpho achilles*, L., caught 5 p. 7. 9. 28 between Jeraguá and Cavalcanti, a little south of Porto Real. It reads thus:—“*Papilio*. This species hovers low among the brushwood in shady deep forests and is not easy to catch.” The general resemblance of the upperside of this *Prepona* and its congeners to *Morpho achilles*, L., suggests a possible mimetic association between the two, which is still further borne out by this note of Burchell’s as to the similarity of their habits. The broad iridescent blue band which is so characteristic of both is probably the one conspicuous feature when they are on the wing, and thus an enemy would be less likely to notice the difference in size.

Westwood placed this date, without 1273, in his list of *Morphinæ*, but corrected the mistake afterwards, writing “an var. Nymph. 16”, which refers to 539 and 541.

Prepona pheridamas, Cram.

Bz. + 855. I. 24. 10. 25. ♂ = 541. Minas Geraës. “*Papilio*. About João Pedro’s, at Discoberto: at the margin of the forest.”

See note on *Prepona amphimachus*, no. 539. This specimen bears two English labels as well as one Brazilian.

The underside of this specimen differs in a remarkable way from that of any individual of the same species in either the British Museum, Godman-Salvin, or Hope Collections. The upperside is, however, identically the same, and the fact that the closely related genus *Charaxes* is extremely variable on the underside also supports the conclusion that the specimen is merely an interesting variety. This view is endorsed by Mr. R. Trimen, F.R.S., who has very kindly examined the specimen. Being unrepresented in any of the above-mentioned collections, a brief description may be of interest:—

Underside. Reddish ochre, with centre rather lighter. *Fore wing*: from base to apex of cell two patches of ground-colour bordered externally by white margins, succeeded by a thin, zigzag, dark brown line; a third patch follows this one, bordered *first* by a thin brown line, then again by a white edging, a combination which continues downwards to the first median nervule. *Hind wing*: central portion, ground-colour mixed with white, giving a striolated appearance. From junction of costa and hind margin to nearly halfway along the second radial nervule a darker patch of ground-colour joining hind margin and continuing to a point at end of third median nervule. An ill-defined trace of band of

ground-colour bordered by thin zigzag brown line and white edging starts from costa, losing itself in central portion at median nervure. Between each nervule and in a line parallel to the hind margin six ill-defined white spots; the sixth, between the second and first median nervules, is larger, not so white, and has a brown spot in the centre. The remainder of the hind margin to anal angle is of the lighter tint.

Compared with an average specimen presented by Godman and Salvin to the Hope Collection the following are the chief points of difference:—The whole ground-colour is a greenish-ochre; the brown lines, many of which are so thin and indistinct in Burchell's specimens, are much more marked in the ordinary type; in the hind wing the band of ground-colour is bounded by a dark line which is prolonged beyond the third median nervule across the second and first almost to anal angle, and followed by the white all the way. The white spots of Burchell's specimen are, however, hardly traceable in the type. Again, the brown spot in discoidal cell is far more strongly marked in both wings than in the variety, in the hind wing of which it is, indeed, necessary to use a lens to find any trace of this discocellular spot. Against this, however, the brown spot in the lower part of the hind wing is hardly traceable in the type. The central portion of the hind wing is also less occupied by lighter colour, inasmuch as the ground-colour from base and hind margin converges more towards the centre than in this interesting variety.

Chlorippe agathina, Cram.

Bz. + 2 p. 5. 5. 29. ♂ = 542. On the Rio Tocantins, north of Porto Real (Naçionale). "Red Clay-slate cliffs", at Sucuri.

Westwood's list agrees. He gives the name as *Apatura*.

Chlorippe vacuna, Godt.

12. 3. 26. ♂ = 543. Rio de Janeiro. "Aqueduct."

13. 3. 26. ♂ = 544. „

13. 3. 26. ♀ = 545. „

Against this last specimen Westwood wrote "*Apatura* ♀?," and he had separated it as a different species under another number.

a. 24. 8. 28. ♂ = 546. At Retiro (between Goyaz and Jeraguá). "All at the rivulet near the house at Retiro."

Westwood's list reads a. 24. 8. 27, which is obviously a clerical error for this date. His dates otherwise agree. He

placed this species under the same number as 542, with the generic name *Apatura*.

546 is very like the other 2 ♂♂ of Burchell's series, but differs from them and a series in the British Museum from Brazil and Paraguay in this respect, namely, that the sub-apical brown spots are much smaller and more separated. There are no ♀♀ in the Godman-Salvin Collection, but the ♂♂ in it agree with specimens 543, 544 mentioned above.

Chlorippe laurentia, Godt.

a. 29. 8. 27. 5 ♂ = 547-551. Cérvo. (As 527.)

Bz. + 30. 8. 27. ♂ = 552. Between Rio Pardo and Rio Grande. "On the road between Paciencia and Veravinha."

Westwood's list gives these under the name *Apatura*, and his dates agree.

Chlorippe linda, Feld., = *plesaurina*, Butl.

Bz. + 25. 8. 27. ♂ = 553. Ollaría to Rio Pardo.

Bz. + 12. 4. 29. ♂ = 554. Porto Real (Nacional).

9. 5. 29. ♂ = 555. Near Alcántara on the Rio Tocantius, S. of Carolina. "(See the view—with the boat.)"

Westwood's list agrees, and he named these *Apatura* also.

Chlorippe linda, Drury, a mimic of *Adelpha nea*, Hew.

On the upperside this *Chlorippe* departs in both sexes from the usual pattern and colouring of its genus, and assumes the regular *Adelpha* pattern of white band, breaking into orange in the fore wing, on a dark brown background. Of the three specimens caught by Burchell, two were taken a little south of Pará. These exactly resemble in pattern a single specimen of *Adelpha nea*, Hew., also taken by him at Pará, though three months later. The chief points to be noticed are:—the shape of the orange band in the fore wing, which is pinched in at the apex of the discoidal cell in *nea*, while in *linda* the apical portion is separated by a narrow interval from the rest of the band. The white band, however, continues downwards of exactly the same width and shape, and the orange patch at anal angle in *nea* is reproduced in *linda* by a rather narrower streak. The shape of the fore wing of *linda* is rather less hooked than in the other species of *Chlorippe*, thus following the straighter hind margin of the *Adelpha*. We may thus safely conclude that *Adelpha nea*,

Hew., which possesses a typical *Adelpha* pattern, is the model, and that *Chlorippe linda*, Drury, which departs so much from the true *Chlorippe* pattern, is the mimic. Another point worthy of notice is the prolonging of the white band of the hind wing well into the fore wing in Burchell's third specimen of *Chlorippe linda*, caught (25. 8. 27) two years earlier a good deal further south near the Rio Pardo. On this very date Burchell caught a specimen of *Adelpha* nr. *abia* (no. 601), in which a noticeable feature is that the white band is prolonged well into the fore wing. Although this latter species is much smaller than *Adelpha nea*, it seems possible that its presence in the south influences the southern *Chlorippe linda* by drawing it away from its northern model, *Adelpha nea*, in this one characteristic.

It should be noted that the mimicry does not extend to the undersides, which are very different.

Adelpha erotia, Hew., form of or species very near.

Bz. 9. 3. 26. = 556. Rio de Janeiro.

Westwood's date agrees. He had named this *Heterochroa lerna*. The generic name is a synonym of *Adelpha*, and is used in the British Museum.

No. 556 appears to be nearest to two specimens from British Guiana in the Godman-Salvin Collection, and it resembles in a lesser degree a long series from S. Paulo, Paraguay, &c. unnamed in the same collection. Burchell's specimen is perhaps the same as *A. phylacides*, Stdgr., from the Upper Amazons, also in Godman-Salvin Collection. In the British Museum the nearest approach to it is *A. thesprotia*, Feld., which most resembles the Godman-Salvin specimens from Paraguay.

Adelpha cocala, Cram.

31. 1. 26. = 557. Rio de Janeiro. (As 474.)

Westwood's date agrees. This he had named *Heterochroa Cocala*, var.

Adelpha cytherea, Linn.

Bz. 191. I. [8. 9. 25]. = 558. Rio de Janeiro. "Papilio. Along the Aqueduct."

4. 11. 25. 2 = 559, 560. Minas Geraës. At Francisco Manoel's. "Some tropeiros from the rancho seeing me catching Papilionidæ, caught a few also for me. I afterwards ascended the hill into the forest northward of our Rancho and took insects, till wet through in a

thunder shower. In the evening caught some insects by the candle."

24. 12. 25. = 561. Rio de Janeiro. "Aqueduct (on the first hill on the left)."

9. 3. 26. = 562. Rio de Janeiro.

10. 3. 26. = 563.

Bz. 12. 3. 26. 3 = 564, 565, 566. Rio de Janeiro. "Aqueduct."

12. 3. 26. = 567. Rio de Janeiro. "Aqueduct."

Westwood's list adds another specimen captured on this date.

13. 3. 26. = 568. Rio de Janeiro.

15. 3. 26. = 569.

18. 3. 26. 2 = 570, 571. " " "Catombi, in plantis."

20. 3. 26. 2 = 572, 573. " " "Along the Carioca Aqueduct."

Bz. 20. 3. 26. = 574. " " "Along the Carioca Aqueduct."

21. 3. 26. = 575. " " "Along the Carioca Aqueduct."

Bz. 21. 3. 26. = 576. " " "Along the Carioca Aqueduct."

Westwood's list adds another specimen captured on this date.

Bz. 22. 3. 26. 2 = 577, 578. Rio de Janeiro. Along the Aqueduct, to the head of the Valley of Laranjeiros.

1. 4. 26. = 579. Rio de Janeiro. "In the valley of Catumbi."

3. 4. 26. 2 = 580, 581. Rio de Janeiro. "Along the Carioca Aqueduct."

7. 6. 29. = 582. Sta. Anna. (On the Rio Tocantins, between Baio and Pará.)

Bz. + 1. 7. 29. = 583. Pará; walk to the Caza de Pao.

1. 7. 29. = 584.

Bz. + 4. 7. 29. = 585. Pará. " " "

20. 9. 29. = 586. Pará. S.E. of S. Joze.

Westwood's list of this species under the name *Heterochroa* adds one more individual captured in Minas Geraes 7. 11. 25. Except for the above additions his dates agree.

Adelpha mythra, Godt., = *zeba*, Hew.

8. 2. 26. 2 = 587, 588. Organ Mountains. " (In a ride to the Cattle Pounds and the Milho Roça.)"

Westwood had written "*Heterochroa*, same as N. 27"

opposite "N. 53," under which stands one of the two preceding specimens. On 588 he had written "*Het. Dionysa Hewits?* Ann."

11. 2. 26. 2 = 589, 590. Organ Mountains. (In a walk to the Ipé trees.)

Under "N. 27" Westwood had written *Heterochroa Mithra*, and his dates agree.

Adelpha syma, Godt.

9. 2. 26. 4 = 591-594. Organ Mountains. "(By the river Pacaqué.)"

11. 2. 26. = 595. Organ Mountains. (As 589.)

This date had been originally written in a clerk's handwriting in Westwood's list of *Adelpha mithra*, but corrected to this species by Westwood himself.

12. 2. 26. = 596. Organ Mountains.

14. 2. 26. 2 = 597, 598. Organ Mountains.

10. 2. 27. = 599. S. Paulo. "Along the great Rio road for about 2 miles N.E."

18. 6. 27. = 600. Vicinity of S. Paulo.

Westwood's name and dates agree.

Adelpha sp. near *abia*, Hew., and perhaps a form of this species.

25. 8. 27. = 601. Ollaria to Rio Pardo.

a. 29. 8. 27. = 602. Cérvó. (As 527.)

30. 10. 27. = 603. Sapezal to Conceição, near Goyaz.

Westwood's list agrees, and the name *Heterochroa* is written opposite. These forms resemble a series, unnamed, in the British Museum. Compared with the Godman-Salvin Collection they closely resemble some specimens placed under *Adelpha abia*, Hew.

Adelpha abia, Hew.

27. 8. 27. = 604. R. Pardo to Retiro.

a. 29. 8. 27. 4 = 605-608. Cérvó. (As 527.)

9. 9. 27. = 609. Tenenté (just N. of the Rio Grande).

a. 24. 8. 28. = 610. Retiro. "All at the rivulet near the house at Retiro." (Between Goyaz and Jeraguá.)

25. 8. 28. = 611. Retiro to Goyavéira. "On the road." Near Goyaz.

Westwood's list adds another specimen captured p. 24. 8. 28 at Retiro. (As 514.) These he had named *Heterochroa Abia*.

Adelpha gerona, Hew.

25. 8. 27. ♂ = 612. Ollaríá to Rio Pardo.

Westwood's list gives this as *Heterochroa Gerona*, and his date agrees.

This specimen has a wider white band than the single specimen (♂) in the British Museum, which is Hewitson's type. There are none in the Godman-Salvin Collection.

Adelpha iphiclea, Linn.

20. 3. 26. = 613. Rio de Janeiro. "Along the Carioca Aqueduct."

Bz. + 3. 4. 26. = 614. „ "Along the Carioca Aqueduct."

A Westwood's label on this specimen bears the following note:—"Het. *Iphiclea* Linn. Drury 1 pl. 14 var. *Basilea* Cr. 188."

Bz. + 24. 3. 29. = 615. Porto Real (Porto Nacional). Mánga.

Westwood's name is *Heterochroa Iphiclea*, and his dates agree.

Adelpha lerna, Hew.

7. 9. 27. ♂ = 616. Cachoóira to Retiro. This is a third Retiro, probably quite close to the Rio Grande, as in his 'Catalogus Geographicus' the following entry is given for the next day:—"Cachoóira to Rio Grande."

Westwood's name is *Heterochroa Lerna*, and his date agrees.

Adelpha plesauve, Hübn.

13. 3. 26. = 617. Rio de Janeiro.

21. 3. 26. = 618. Rio de Janeiro. "Along the Carioca Aqueduct."

Westwood's dates agree, and he had identified the genus as *Heterochroa*.

Adelpha serpa, Boisd.

27. 1. 26. ♂ = 619. Rio de Janeiro.

8. 2. 26. ♂ = 620. Organ Mountains. "In a ride to the Cattle Pounds and the Milho Roça."

Bz. 10. 3. 26. ♂ = 621. Rio de Janeiro.

20. 3. 26. ♀ = 622. Rio de Janeiro. "Along the Carioca Aqueduct."

Westwood's list agrees, and he names the species *Heterochroa Serpa*. His label on 620 bears the following note:—
 “*H. Serpa* Bdv. *Iphiclus* Cr. 188.”

Adelpha nea, Hew.

7. 8. 29. ♀ = 623. Pará.

Westwood's date agrees, and against this he had written “*Heterochroa Nea* var. ?” A note on the mimetic association between this species and *Chlorippe linda*, Feld., is given under that species on pages 174, 175.

Pyrrhogyra crameri, Auriv.

Bz. + 22. 4. 29. = 624. Porto Real (Nacional).

Westwood's date and generic name agree.

Pyrrhogyra tipha, Linn., = *nearea*, Linn.

Bz. + 22. 4. 29. = 625. Porto Real (Nacional).

22. 4. 29. 2 = 626, 627. ” ”

Westwood's date and generic name agree.

Timetes (Megalura) chiron, F.

Bz. 559. II. [19. 10. 25]. 2 = 628, 629. Minas Geraës.
 “*Pap[ilio]*.”

Bz. + 903. V. 25. 10. 25. 4 = 630-633. Minas Geraës.
 “*P[apilio]*. At Discoberto, near João Pedro's house.”

Westwood's list adds another specimen of this date.

Bz. + 996. I. 27. 10. 25. = 634. Minas Geraës. “*Pap[ilio]*. At San João de Nepomucéna and on the road from Discoberto.”

28. 10. 25. 4 = 635-638. Minas Geraës. “In the Forest on the West and on the East side of S. João de Nêpomucéna.”

Westwood's list adds two more specimens captured on this date.

29. 10. 25. 2 = 639, 640. Minas Geraës. “In the forest on the S.E. side of S. João de Nêpomucéna.”

4. 11. 25. 5 = 641-645. Minas Geraës. (As 559.)

Bz. 12. 3. 26. = 646. Rio de Janeiro. “Aqueduct.”

Bz. 16. 3. 26. = 647. Rio de Janeiro. “In the upper part of the valley of Catombi, and along the road thence to Rio Comprido and Matto Porcos.”

Bz. 3. 4. 26. = 648. Rio de Janeiro. “Along the Carioca Aqueduct.”

Bz. 28. 11. 28. = 649. Porto Real (Nacional).

27. 5. 29. = 650. Arróyos; on the Rio Tocantins, between Itabóca and Baião.

Westwood's list omits one specimen dated 29. 10. 25, but adds another with the date 24. 10. 25. It is probable that "24" has been accidentally written for "29." Opposite this species Westwood had written "*Timetes Chiron*, Fab.; *Marius*, Cram."

Timetes (Megalura) coresia, Godt.

9. 2. 26. 2 = 651, 652. Organ Mountains. (By the River Pacaqué.)

Westwood's date agrees, and he identified the species as *Timetes Coresia*. On 651 he gives a label bearing the words:—" *Timetes Coresia* Godt., *Zerynthia*, Hb."

Timetes (Marpesia) peleus, Salz.

4. 11. 25. 2 = 653, 654. Minas Geraës. (As 559.)

Westwood's list gives another specimen captured on this date.

p. 24. 8. 28. = 655. Retiro. (As 514.)

Westwood's dates agree, and he names this *Marpesia Thetys*, a synonym of *peleus*.

Amphirene (Sipræta) trayja, Hübn.

27. 8. 27. = 656. Retiro. (Just north of Rio Pardo.)

Westwood's date agrees, and he gives the name as "*Minetra Trayja*."

Victorina stelenes, Linn.

Bz. + a. 29. 8. 27. = 657. Cérvó. (As 527.)

Westwood's date agrees, though this appears under his list of *Acræinæ*. Opposite the number he had written:—" *Junonia?* brown with green spots."

Cystineura apicalis, Stdgr., n. subsp. *burchelli*.

Bz. 23. 3. 28. ♂ = 658. Goyaz. Sitio of Zacharía.

Westwood's list makes this date to be 23. 4. 28.

Bz. 19. 9. 28. ♀ = 659. "Sylv. Tucantins." Rio Tucantins.

Bz. 16. 2. 29. ♀ = 660. Porto Real (Nacional). "Papiliones (3) caught on the flowers of a *Malva* in the back yard."

Col. Prain informs me that no specimen of this *Malva* exists in Burchell's Herbarium at Kew.

Bz. 22. 3. 29. ♀ = 661. Porto Real (Nacional).

24. 3. 29. ♂ = 662. Porto Real. Mánga.

Westwood's list agrees, except that it also includes 663.

This form is unrepresented in the British Museum and Godman-Salvin Collection. It may be regarded as a northern subspecies of *C. apicalis*, Stdgr., described as a South Brazilian insect.

Cystineura apicalis, Stdgr., n. subsp. *burchelli*.

Female (no. 661). Central ground-colour white, surrounded by fuscous-brown margins; some dull orange in apical area of fore wing. *Fore wing*: from base towards apex a broad costal fuscous border covering discoidal cell; beyond end of cell a white kidney-shaped spot, succeeded by apical fuscous patch, which itself encloses diffused dull orange in the centre; from the fourth subcostal nervule and in the centre of the orange patch a series of four internervular spots of fuscous ground-colour, with white centres increasing in size towards the last. Central portion of wing occupied by triangular patch of white, widening from third median nervule to inner margin. Two irregular, oblong, faint, white spots in discoidal cell running into ground-colour, with very slight trace of a third over the junction of the two. Hind margin with a border of rather darker fuscous, slightly serrated on inner side. Cilia white between nervules. *Hind wing*: subcostal band of fore wing continued across base of hind wing, succeeded by central patch of white. Hind-marginal band of fuscous rather broader than in fore wing; the actual margin marked by a darker line, preceded by an interrupted faint whitish line, both following the serration of the wing. From centre of inner margin to costa beyond middle a narrow, nearly straight, fuscous band, which almost loses itself in the white central patch at the second subcostal nervule, but continues again, indistinctly and slightly narrower, from the first subcostal nervule. Cilia as in fore wing.

Underside dull orange and white. *Fore wing*: same band from base towards apex as on upperside, dull orange instead of fuscous, marked by similar (but better defined) irregular white spots, and succeeded by rather larger kidney-shaped white spot, which is enclosed in the apical orange patch. A row of five white spots from costa between nervules to second median nervule, their central portion white as on upper surface, but better defined. Hind margin marked by

thin dark line, internally relieved by small indistinct white lunules. *Hind wing*: dull orange patch at base in continuation of band in fore wing. White central patch with dull orange band from inner margin to costa, broken, however, between first and second subcostal nervules. Hind-marginal band of dull orange, broadening at centre and narrow again at anal angle, more serrated than in fore wing and bounded by darker thin line relieved internally by larger white lunules.

Male (no. 662) differs slightly from the female in size, being rather smaller and having rather more pointed fore wings. Also the kidney-shaped white spot under the costa in the fore wing is a little smaller. On the underside the central patch of white in the fore wing is extended nearly to the apex, leaving only a narrow border of ground-colour lining the apex and hind margin. In the hind wing the dull orange band is continuous instead of being broken between first and second subcostal nervules as in female. In other respects the markings of the male are the same as in the female.

Type ♂ of *burchelli*, specimen 662, and type ♀, specimen 661, in Hope Department, University Museum, Oxford.

Distribution (based on the five specimens captured by Burchell). From Goyaz northwards to Porto Real (Nacional) on the Rio Tocantins: the interior of Eastern Brazil.

These differ from the series of *Cystineura apicalis*, Stdgr., in the British Museum and in the Godman-Salvin Collections chiefly in the absence of a large apical patch of dull orange in fore wing, which is characteristic of all specimens in those collections.

In two specimens from Casa Branca, S. Paulo, in the Godman-Salvin Collection the fuscous band in the hind wing is broader than in *apicalis* and is of equal width throughout. In depth of colour it resembles the hind-marginal border. The dull orange apical patch extends from the kidney-shaped white spot below the costa to the first median nervule, leaving a narrow serrated border to the hind margin. The white spots on the underside are less marked than in *burchelli*.

In six from Chapada, also in the Godman-Salvin Collection, the fuscous band across the hind wing tapers towards the costa as in *burchelli*, and in one individual is broken between the first and second subcostal nervules.

Two specimens from Paraguay (captured 1904 and 1905) in the British Museum have a more slate-coloured appearance, which is even more accentuated in two very fine specimens from Coroico, Bolivia, in the Godman-Salvin

Collection. With the aid of a lens it is at once seen that this is due to a fine dusting of white scales on the fuscous ground-colour. These seem to disappear in older specimens. The above-mentioned two specimens from Paraguay have a rather broader fuscous band in the hind wing, and in one female from Santa Cruz, Upper Paragnay River, the white in both wings is reduced to form two narrow bands.

Cystineura tocantina, Bates.

1316. 17. 2. 29. = 663. Porto Real (Nacional). "Feeding on the flowers of the *Waltheria* bushes (v. H. 8632 ×)." Col. Prain, F.R.S., kindly informs me that Burchell's "8632-2" is named *Waltheria ferruginea*?, St. Hil., in the herbarium. Burchell's botanical catalogue contains these words:—"8632-2 *Waltheria* v. Cat. Entomol. Frutex 5-7-ped. ramosus. Corolla citrina, vel sulphurea."

Included under *burchelli* in Westwood's list. His date agrees.

This is unrepresented in the British Museum, but has been compared with specimens in the Godman-Salvin Collection.

Didonis biblis, F.

Bz. 141. III. [16. 8. 25]. 2 = 664, 665. Rio de Janeiro. "*Papilio*. Above the Teresa Convent; and on the woody hilly [hills] along the Aqueduct."

Westwood's list adds one more of this date.

4. 11. 25. = 666. Minas Geraës. (As 559.)

6. 12. 25. = 667. Rio de Janeiro. On the Corcovado Mountain. "In an excursion to the Summit of the Corcovado by the road by the Convent of Sta. Theresa and along the Aqueduct."

Westwood's list adds another of this date.

31. 12. 25. 2 = 668, 669. Rio de Janeiro. On the Corcovado Mountain, and in the Valley of Laranjeiras. "Excursion to the summit of the Corcovado; from Catete and up the valley of Laranjeiros."

10. 1. 26. 2 = 670, 671. Rio de Janeiro. Praia Grande and S. João de Carahy. "At Praia Grande and vicinity, and about S. João de Carahy."

26. 1. 26. = 672. Rio de Janeiro. Morro de Ladéira and Catombi. "In a botanical and entomological excursion to the *Barra Vermelha*, *Morro de Ladeira*, and *Catombi*."

Westwood adds another of this date.

27. 1. 26. = 673. Rio de Janeiro.

Westwood's list adds two more specimens of this date.

7. 3. 26. = 674. "Catombi." Rio de Janeiro. "At Catombi."
7. 3. 26. = 675. Rio de Janeiro. "At Catombi."
- Bz. 7. 3. 26. = 676. Another label attached to this specimen has the words:—"Duplicate Lepidoptera, selected from my Brazilian collection." Rio de Janeiro. "At Catombi."
- Bz. 9. 3. 26. = 677. Rio de Janeiro.
16. 3. 26. = 678. " (As 647.)
- Bz. 16. 3. 26. = 679.
27. 8. 27. = 680. Retiro. "Just north of Rio Pardo."
30. 10. 27. = 681. Sapezal to Conceição; near Goyaz.
- Bz. 25. 8. 28. = 682. Retiro to Goyavéira. "On the road." This Retiro is east of Goyaz, and the place mentioned on 514.

Westwood had written the name *Biblis*, and his list adds three individuals captured:—

14. 1. 26. Rio de Janeiro. "Brought from and collected in the Valley of Laranjeiros. Omnia insuper plantas."
19. 3. 26. Rio de Janeiro. "In the valley of Catombi."
20. 3. 26. Rio de Janeiro. "Along the Carioca Aqueduct."

Peridromia arethusa, Cram.

- Bz. 194. I. [8. 9. 25]. = 683. Rio de Janeiro. Along the Aqueduct. "*Papilio*. In sylva."
1068. [3. 4. 26]. = 684. Rio de Janeiro. Along the Carioca Aqueduct. "*Papilio*: totimque nigra supra maculis cæruleis, subtus maculis rubris. This settles on the sunny smooth trunks of trees." [Other butterflies bearing the same number are:—*Papilio hectorides*, Esp., 1; *Papilio torquatus*, Cr., subsp. *polybius*, Swains., 1.]
1243. 7. 9. 28. 4 = 685–688. Rio Maranhão to Fe Guárda Môr. Between Jeraguá and Cavalcanti; near Rio Maranhão. "2 sp[ecies of] Papiliones caught against sunny side of trunk of a large tree on bank of the Maranhão. Wings expanded flat against the trunk."—"1243 conf. *Pap. arethusa*" [added later in pencil on blank page]. The other species is *Ageronia chloë*, Stoll.
- Bz. + 1243. 7. 9. 28. = 689. Rio Maranhão to Fe Guárda Môr. As above.

Westwood's list gives two more specimens captured on this date. He gives the name "*Aug. Arcte*" to one of the two numbers into which he had divided these specimens.

On 683 he had written "*Angerona Arete* Bdv. Lucas. *Arethusa* Cram. 77 nec *Arethusa* Hb. Samml."

Opposite Burchell's species of *Peridromia* and *Ageronia* Westwood has accidentally written for the latter name that of the Geometrid genus *Angerona*.

Peridromia amphinome, Linn.

Bz. 351. I. [15. 10. 25]. = 690. Minas Geraës. "At the Discobérto do Antonio Velho." "*P[apilio]*. This species and the following [*Peridromia feronia*, Linn.] settle on the smooth sunny bark of the trunks of large trees, and when in their flight they meet another of the same species they appear to fight, and at the same time produce with their wings an extraordinary and loud and quickly repeated crackling noise."

The same fact was observed seven years later by Charles Darwin, and recorded in his 'Journal of Researches &c.,' London, 1876, pp. 33, 34 (Rio de Janeiro, 1832):—

"I was much surprised at the habits of *Papilio feronia*. This butterfly is not uncommon, and generally frequents the orange-groves. Although a high flier, yet it very frequently alights on the trunks of trees. On these occasions its head is invariably placed downwards; and its wings are expanded in a horizontal plane, instead of being folded vertically, as is commonly the case. This is the only butterfly which I have ever seen, that uses its legs for running. Not being aware of this fact, the insect, more than once, as I cautiously approached with my forceps, shuffled on one side just as the instrument was on the point of closing, and thus escaped. But a far more singular fact is the power which this species possesses of making a noise. Several times when a pair, probably male and female, were chasing each other in an irregular course, they passed within a few yards of me; and I distinctly heard a clicking noise, similar to that produced by a toothed wheel passing under a spring catch. The noise was continued at short intervals, and could be distinguished at about twenty yards' distance: I am certain there is no error in the observation."

See also Lepidoptera Rhopalocera of the 'Biologia Centrali-Americana,' F. D. Godman, F.R.S., and O. Salvin, F.R.S., vol. i. pp. 267, 268.

12. 3. 26. = 691. Rio de Janeiro. "Aqueduct."

Bz. 20. 3. 26. 2 = 692, 693. Rio de Janeiro. "Along the Carioca Aqueduct."

Westwood's list agrees, and the name he gives in it is *Angerona Amphinome*, Linn., which also appears in his handwriting on 691.

Peridromia feronia, Linn.

Bz. 352. I. [15. 10. 25]. = 694. Minas Geraës. "*P[apilio]*."

At the Discobérto do Antonio Velho.

See Burchell's note to no. 690, which refers equally to this individual.

28. 10. 25. = 695. Minas Geraës. (As 635.)

29. 12. 25. = 696. Rio de Janeiro. Catombí, Barra Vermelha, and Rio Comprido.

10. 1. 26. = 697. Rio de Janeiro. (As 670.)

14. 1. 26. = 698. " " Brought from and collected in the Valley of Laranjeiros. *Omnia insuper plantas.*"

27. 1. 26. = 699. Rio de Janeiro.

9. 3. 26. = 700. " "

10. 3. 26. = 701. " "

Bz. 15. 3. 26. = 702. " "*"Catombi, in plantis."*

Bz. 16. 3. 26. = 703. " (As 647.)

16. 3. 26. = 704. " "

22. 3. 26. = 705. " "*"Along the Carioca Aqueduct" "to the head of the Valley of Laranjeiros."*

1. 4. 26. = 706. " "*"In the valley of Catumbi."*

26. 9. 26. = 707. Santos. In a walk to the Chapel on Montserrat. *"These Papiliones very plentiful in the woods. The white-spotted one settling on smooth bark on sunny side of trees, with outspread wings close to bark, and returning often to the same tree when disturbed."*

1226. 16. 4. 28. = 708. Goyaz. Morro de Cantagallo. *"Papilio. Settles with wings expanded against sunny side of trunk of tree in forest. Same manners and movements as its congeners."*

23. 6. 29. = 709. Pará.

Westwood's list agrees, and he gives the name *Angerona Feronia*.

Peridromia epinome, Boisd.

28. 10. 27. = 710. S. Joaquim to Sapezál. Between Meia Ponte and Goyaz.

Bz. a. 24. 8. 28. = 711. At Retiro. (See 514.) "All at the rivulet, near the house at Retiro."

p. 24. 8. 28. 2 = 712, 713. At Retiro. (As 514.)

Westwood's list agrees, though he places this species with the next under the name *Angerona Ferentina*.

Ageronia ferentina, Godt.

Bz. + 29. 12. 25. = 714. On the Brazilian label is the following:—"Papiliones hujus generis insident in truncis nudis apricis." Rio de Janeiro, Catombí, Barra Vermelha, and Rio Comprido.

14. 1. 26. = 715. Rio de Janeiro. (As 698.)

7. 3. 26. = 716. "At Catombí."

12. 3. 26. = 717. "Aqueduct."

Bz. 16. 3. 26. = 718. (As 647.)

3. 4. 26. = 719. "Along the Carioca Aqueduct."

1. 2. 30. = 720. Pará. In the forest S.S.E. of S. Jozé.

Westwood's list agrees. On 720 he had written "*Angerona Ferentina*, Godt."

Ageronia chloë, Stoll.

1243-2. 7. 9. 28. 3 = 721-723. Rio Maranhão to Fc Guarda Môr. (As 685.)

Westwood's list and name agree, except that he writes the generic name as *Angerona*. On 722 he had written "*Angerona Chloe*, Stoll."

Gynæcia dirce, Linn.

10. 1. 26. 3 = 724-726. Rio de Janeiro. (As 670.)

Westwood's list gives another individual captured 7. 3. 26. Rio de Janeiro. "At Catombí." His name and dates otherwise agree.

The general resemblance on the upper surface between this species and *Hypna clytemnestra*, Cr., may prove to be of mimetic significance. On comparing the data on Burchell's specimens the following facts are evident:—Between Sept. 8th, 1825, and April 3rd, 1826, Burchell captured 54 specimens (by Westwood's list, see pp. 167-168) of *Hypna clytemnestra*, Cr., at Rio de Janeiro and its neighbourhood. Of these 46 can now be traced. In the same locality he took 4 specimens (of which we now possess 3) of *Gynæcia dirce*, L., on the two dates Jan. 10th, 1826, and March 7th, 1826. From Westwood's list we gain still further evidence that the

two species are on the wing together; for he gives 10 specimens of *H. clytemnestra* caught March 7th, 1826, at Catomby, and one of *G. dirce* on the very same day. Five of the *clytemnestra* have unfortunately since been lost, as well as this single *dirce*.

The pattern, which consists of a dark fuscous background enlivened only by a broad yellow bar across the apex of the fore wing, stands out in each case from that which is found in the allied species. It is difficult, and perhaps impossible, to determine which of the two forms has acted as model; but in the case of *H. clytemnestra*, the species of the closely related genus *Protogonius* are invariably, although roughly, mimetic. Thus *Protogonius drurii* mimics *Heliconius narceus*. Hence it becomes probable that this propensity for mimicry is extended to *H. clytemnestra*. Burchell's specimens of *clytemnestra* without exception exhibit three yellow spots just beyond the subapical band of the fore wing; and these are absent in *dirce*. However, on comparing a series of each in the Hope Collection from Paraguay, I observed that the spots were in some cases reduced in *clytemnestra* and correspondingly present in *dirce*, as if the mimetic association was stronger in that part of the country.

It must be further noted that this is only a case of upper-side mimicry. The underside of *clytemnestra* is procryptically coloured, apparently for concealment among dead leaves, while the bolder pattern of *G. dirce* is adapted for the protective resemblance to tree-trunks on which it rests with upright wings (H. W. Bates in *Lepidoptera Rhopalocera* of the 'Biologia Centrali-Americana,' F. D. Godman, F.R.S., and O. Salvin, F.R.S., vol. i. pp. 264-266).

Catagramma lyrophila, Hübn.

Bz. 286. I. [13. 10. 25]. = 727. Minas Geraës. Parahíba. "Papil[io] affinis præcedenti," viz. *Callicore clymena*, Cram.

Bz. + 912. I. 25. 10. 25. = 728. Minas Geraës. "P[apilio]. At Discoberto, near João Pedro's house."

12. 2. 26. = 729. Organ Mountains.

A date given as 12. 26 (omitting the month) in Westwood's list has probably been accidentally substituted for that of 729.

25. 8. 27. = 730. Ollaia to Rio Pardo.

26. 8. 27. = 731. R. Pardo to Cubatão. (See 515.)

"Lepidoptera caught on the riverside at the ferry of the

Rio Pardo" (A.M.) or "at the passage of the several streams this day" (P.M.).

Bz. 27. 8. 28. = 732. Goiaveira. Between Goyaz and Jeraguá. "All these Lepidoptera were caught at the ford of the rivulet at Goiabeira, at 5 P.M." This rivulet is evidently one of the head waters of the Rio Tocantins.

Westwood's list gives eight more additional specimens captured on this date. His list also refers to the following additional specimens, the dates of which have made it possible to recover the accompanying data:—

564. I. [19. 10. 25.] Minas Geraës. "*Pap[ilio]*."

4. 11. 25. 2 specimens. Minas Geraës. (As 559.)

10. 11. 25. Minas Geraës.

31. 1. 26. Rio de Janeiro. (As 474.)

9. 2. 26. Organ Mountains. (By the river Pacaquê.)

9. 3. 26. Rio de Janeiro.

12. 3. 26. " " "Aqueduct."

a. 24. 8. 27. 2 specimens. Ollaria, just S. of the Rio Pardo.

25. 8. 27. 5 specimens in addition to 730.

a. 26. 8. 27. 3 specimens. R. Pardo to Cubatão. (See 515.)

"Lepidoptera caught on the river side at the ferry of the Rio Pardo."

27. 8. 27. R. Pardo to Retiro.

11. 10. 27. 2 specimens. "To Fórna" (from the south). Between Meia Ponte and Bomfim.

Westwood noted these as belonging to the genus *Catagramma*, and on 727 he had written "*Hydaspes*. Drury iii. pl. 15 *Lyrophila* Hb. Zutr. 397." Burchell's specimens of *lyrophila* correspond well with a long series in the Godman-Salvin Collection from Rio de Janeiro, Minas Geraës, Chapada, and Paraguay.

Catagramma latona, Butl.

10. 4. 28. ♀ = 733. Goyaz. Caminho de Carréira. "All caught in the Caminho da Carreira, beyond the Church of Sta. Barbara. The whole road being woody."

Westwood's list places this in the series of *Catagramma sorana*, Godt.

This specimen exactly resembles Butler's type in the Godman-Salvin Collection, but three specimens in the British Museum labelled "*C. latona*, Butl.," differ in having a narrower red subapical band.

Catagramma sorana, Godt.

- a. 26. 8. 27. = 734. R. Pardo to Cubatão. (See 515.)
 "Lepidoptera caught on the river side at the ferry of the Rio Pardo."
Bz.+ p. 26. 8. 27. = 735. R. Pardo to Cubatão. (See 515.)
 "Lepidoptera caught at the passage of the several streams this day."
Bz.+ 30. 8. 27. = 736. "On the road between Paciencia and Veravinha." (As 552.)
 30. 8. 27. = 737. "On the road between Paciencia and Veravinha."
Bz. a. 24. 8. 28. = 738. Retiro. (As 610.)
 Westwood's generic name agrees: his list also corresponds, except for the inclusion of 733 and the accidental substitution of two "a. 26. 8. 27" for one of this date and one of "p. 26. 8. 27."

Catagramma selima, Guénée.

- Bz.*+ a. 26. 8. 27. ♂ = 739. R. Pardo to Cubatão. (As 734.)
 9. 9. 27. ♂ = 740. Tenénte. Close to Rio Grande.
Bz.+ 24. 10. 27. ♂ = 741. Meiaponte to S. Joaquim (Joaq. Alves).

Westwood's list adds another specimen captured on this date.

- a. 24. 8. 28. 3♂ = 742-744. Retiro. (As 610.)
 27. 8. 28. ♂ = 745. Goiaveira. (As 732.)

Westwood's list adds five individuals, captured a. 24. 8. 27 at Ollaria, just S. of R. Pardo, and omits the three captured a. 24. 8. 28. The discrepancy may, perhaps, be accounted for by the clerical substitution of "27" for "28" in the year of the date, in which case two specimens are still missing. His generic name agrees, and on 739 he had written "*Cynosura* ♀ Hew. Ex. Lep. f. 22, 23."

This species was compared with type in the British Museum. In the Hewitson Collection it stood under *C. cynosura*, Doubl. Hew. A series named *C. astarte*, Cr., in the Godman-Salvin Collection is also very similar, except that the markings on the undersides are rather heavier than in Burchell's specimens.

Catagramma cyllene, Dbl. & Hew.

- Bz.* 359. I. [15. 10. 25]. = 746. Minas Geraës. "*Papilio*.

At the Discobérto do Antonio Velho. Aff. 285." By this number Burchell refers to *Callicore clymena*, Cr. Bz. + 966. I. 26. 10. 25. = 747. Minas Geraës. "Pap [ilio]. At Discoberto; near João Pedro's house."

Westwood's list and generic name agree, except for an obvious clerical error in the number of the last specimen, which is given as 996. On 747 he had written "*C. Cyllene* Gen. D. L. Pl. 28 *Pygas* ♀ teste Hew. Cat. Iconogr."

Catagramma pygas, Godt., f. *thamyras*, Mén.

28. 4. 28. = 748. Goyaz. "Papiliones caught by U[ongo] at the Carioca spring." Congo was Burchell's native servant.

Westwood's list and generic name agree.

In the British Museum this is given as the *thamyras*, Mén., form of *C. pygas*, Godt. Four similar specimens from Chapada are unnamed in the Godman-Salvin Collection.

Catagramma pyracmon, Godt.

a. 26. 8. 27. 2 = 749, 750. R. Pardo to Cubatão. (As 734.)

Westwood's list adds two more captured on this date, one in the morning and the other in the afternoon.

Bz. 27. 8. 27. = 751. Rio Pardo to Retiro.

27. 8. 27. = 752.

Westwood's list adds an individual captured 25. 8. 27, Ollaria to Rio Pardo, and another with a. 29. 8. 27, Cervo. (As 527.) He writes against this also the genus *Catagramma*.

Catagramma sp. near *peristera*, Hew.

3. 3. 28. = 753. Goyaz. "Caught in the town by the rio Vermelho; by U[ongo]."

Westwood's date and generic name agree.

This specimen bears a Westwood's label which is somewhat difficult to interpret, but almost certainly reads thus:—"Obs.[erve] plaga sang. alar. post.; [or? "i" for "in"] forma diversa alar. post. An. sign. alb. necnon striola cærul. marg. al. post." It is obvious that "ant." should have been written in place of one "post.," probably the first. The "An" is probably intended for "Ant." Before "An" is a mark which may be Westwood's monogram or, perhaps, an erased letter.

This is probably a geographical subspecies of *C. peristera*, and compared with a long series from Bolivia, the Lower Amazon, New Granada, Ecuador, and Eastern Peru in the

Godman-Salvin Collection, exhibits the following differences:—(i.) the red patch in hind wing is narrower than in the above-mentioned species; (ii.) the blue on the margin at anal angle is slightly more developed; (iii.) the hind-wing underside in Burchell's specimens has the yellow submarginal line of the same width from costa to anal angle, while in the Godman-Salvin series this yellow line is widest at its costal end, and tapers off to the second median nervule, where it is interrupted by a black spot, and again by a second spot at the first median nervule.

Catagramma pasithea, Hew.

24. 3. 29. = **754**. Porto Real (Nacional). Mánaga.

(5.?) 5. 29. = **755**. Red Clay-slate cliffs [at Sucuri] on the Rio Tocantins, north of Porto Real (Nacional).

Westwood's dates and generic name agree.

In a series in the Godman-Salvin Collection from Peru, the Upper Amazon, and Bolivia there is a thin blue submarginal line in the hind wing which is absent in Burchell's specimens, while there is also more red developed on the underside than in his specimens.

Callicore kolyma, Hew.

Bz. 28. 4. 28. = **756**. Goyaz. (As **748**.)

Westwood's list gives two more individuals captured on this date.

27. 8. 28. = **757**. Goiaveira. (As **732**.)

Westwood's list makes this last date 27. 8. 27 instead of 27. 8. 28. He also places this and the following species of the genus *Callicore* among the *Catagrammas*.

On the underside the red marking at the base of both wings is much reduced in these two specimens, which correspond with a series of ten, half from Chapada and half from New Granada, in the Godman-Salvin Collection. But in ten from Ecuador and two from Peru and the Upper Amazon the red is more dominant. In the Hope Collection four specimens from Ecuador have the light blue submarginal line developed all along the hind margin; in one from the Upper Amazon it is only present for half the distance from the costa to the anal angle, while in these two Burchell specimens it is still further reduced to a small streak across the apex. On the underside this peculiarity is even more noticeable, the line being reduced to two small blue dots in **756** and absent altogether in **757**. Furthermore, in a series of five from S.E. Brazil in the Godman-Salvin Collection this line is only partially developed. On the upperside in three of these there

is a well-marked red spot on the fore wing just beyond the apex of the discoidal cell, which is much less developed in Burchell's specimens and in the remaining two of the Godman-Salvin series of five.

Omitting the consideration of this last variable character in S.E. Brazil, it appears that the development of the red patch at the base and the blue line at the hind margin are the chief characteristics of the western forms, and that both become more reduced as we follow the species south-eastwards, until, in extreme varieties, the blue line may be lost altogether (as in 757). Furthermore, the five specimens from New Granada indicate that a reduction of red similar to that of the east also occurs to the north.

Callicore candrena, Godt.

Bz. 27. 8. 27. 2 = 758, 759. Rio Pardo to Retiro.

Bz. + 28. 8. 27. = 760. "Retiro." This locality on the specimen is confirmed by the Brazilian Note-book and the 'Catalogus Geographicus.'

Bz. 30. 8. 27. = 761. (As 552.) "On the road between Paciencia and Veravinha."

Bz. 27. 8. 28. = 762. Goiaveira. (As 732.)

27. 8. 28. = 763.

Westwood's list agrees, but includes an additional specimen captured on this last date, and another with the date 11. 2. 26. Organ Mountains (in a walk to the Ipé trees). On 758 he had written "*Catagr. Candrena* Hb., Zutr. 893, 894."

Callicore janeira, Feld.

Bz. + 12 a. 4. 5. 29. = 764. Funil; north of Porto Real (Nacional).

This specimen does not bear any of the numbers of Westwood's list of *Nymphalinae*, but it is probably referred to under *Callicore eluina*, Hew.

Callicore clymena, Cram.

Bz. 285. III. [13. 10. 25]. = 765. Minas Geraes. Parahíba. "*Papilio* . . . (253)." This latter number refers to a missing specimen which Burchell considered identical with 285. Opposite (253) he had written "*Papilio* '88.' In open sunny places; very common about Ranchos and in yards near houses. It is often very familiar." [Butterflies of this genus (*Catagramma*) are called 88's because of the markings on the undersides of the hind wings.]

Westwood's list gives either one or two more of this date. The figure is indistinct.

4. 11. 25. = 766. Minas Geraës. (As 559.)

Westwood's list mentions three more captured on this date.

2. 3. 29. = 767. Porto Real (Nacional).

In the Godman-Salvin Collection the name *janeira* is given to the northern and eastern form; *clymena* (on the whole rather more heavily marked on the underside and a deeper blue on the hind-wing upper surface) to the south-west; while four specimens from Rio Grande and Sta. Catherina (still further south), in which the blue at the apex of the fore wing is greatly reduced, are unnamed. Specimens of both *clymena* and *eluina* are grouped under N. 46 and also under N. 72 of Westwood's list. He gives the generic name *Catagramma* to both numbers.

Callicore eluina, Hew.

Bz. + 1. 8. 27. = 768. The Brazilian label has the words "on the road," and upon the English label is "iter faciendo." Between Jundiahý and Cupivarý. North of S. Paulo. The 'Catalogus Geographicus' gives the date "a. 1. 8. 27" opposite the words "on road."

This date is not mentioned by Westwood.

25. 8. 27. 32 = 769-800. Ollaria to Rio Pardo.

Bz. + 25. 8. 27. 7 = 801-807. " "

Westwood's list gives nine more individuals captured on this date.

a. 26. 8. 27. 6 = 808-813. Rio Pardo to Cubatáo. (As 734.)

Bz. + a. 26. 8. 27. = 814. " "

Westwood's list gives four more specimens of this date.

a. 28. 8. 27. = 815. At Retiro. Just north of Rio Pardo.

This date, including the "a," is not mentioned by Westwood, but possibly one of his four additional specimens of the preceding date may have been accidentally copied as the 26th instead of the 28th.

28. 8. 27. 2 = 816, 817. "Retiro." As above.

a. 29. 8. 27. 8 = 818-825. Cérvo. (As 527.)

Bz. a. 29. 8. 27. 3 = 826-828. " "

Westwood's list gives six more specimens captured on this date.

a. 24. 8. 28. = 829. Retiro. Between Goyaz and Jeraguá.

"All at the rivulet near the house at Retiro."

Bz. a. 24. 8. 28. = 830. Retiro. Between Goyaz and Jeraguá. "All at the rivulet near the house at Retiro."

The dates of both 829 and 830 are omitted by Westwood.

Bz. 27. 8. 28 + 25. 8. 27. = 831. Goiaveira (as 732), or Ollaríá to Rio Pardo.

This specimen evidently bears the labels of two specimens captured at dates a year apart. The Brazilian label bears the later date.

27. 8. 28. = 832. Goiaveira. (As 732.)

Westwood's list gives three individuals captured 27. 8. 27. As his list does not give any specimens dated 27. 8. 28 or a. 24. 8. 28, it is possible that his 27. 8. 27 is a copyist's error for these omitted dates. One missing specimen of 25. 8. 27 may be represented by no. 831.

Westwood's list also gives the following additional specimens which are now unfortunately missing:—

354. I. [15. 10. 25]. "*P[apilio]*. Minas Geraës. At the Discobérto do Antonio Velho."

12. 3. 26. Rio de Janeiro. "Aqueduct."

13. 3. 26.

"

19. 3. 26. " " "In the valley of Catombí."

3. 4. 26.

"

" " "Along the Carioca Aqueduct."

a. 29. 8. 27. Cérvó. (As 527.)

30. 10. 27. 2 specimens. Sapezal to Conceição; near Goyaz.

28. 1. 28. Goyaz. Camínho de Ferréiro.

28. 4. 28. 10 specimens. Goyaz. "Papiliones caught by C[ongo] at the Carioca spring."

2. 2. 29. 2 specimens. Porto Real (Naçãoale), Western side of River. "On the western side of the Tucantins."

10. 3. 29. Porto Real. "Lepidoptera began to appear more numerous in the end of Feby, and since the beginning of this month they appear abundant."

24. 3. 29. Porto Real. Mánga.

12. a. 4. 5. 29. This specimen is almost certainly 764.

The Godman-Salvin Collection contains only three specimens of this species. On 772 Westwood had written "*Cat. Eluina* Hew. Ex. B. f. 30."

Hæmatera pyramus, F.

25. 8. 27. = 833. Ollaríá to Rio Pardo.

Westwood's name and date agree; the remaining two specimens come under the last number in his list of *Nymphalínæ*, and are not named by him.

27. 8. 27. = 834. Rio Pardo to Retíro.

p. 8. 9. 27. = 835. Cachoéira to Rio Gránde. "At the Rio Grande. Papiliones."

Westwood's dates agree.

[To be continued.]